9. Nina

Program Name: Nina.java **Input File: nina.dat**

Nina is the grounds keeper for all the city parks in Jayton, Texas. Recently the Jayton city council voted to create a dog park for the canine citizens of the town, naming it the 5 Star Dog Park. In the spirit of the name the council members would like for the park to be in the shape of a regular pentagon (all sides congruent, all angles congruent). There are a variety of places where the park can be built, all of which would allow for a different size park. The council would like for Nina to determine the area each potential park would cover and the amount of perimeter fencing each would require. Additionally, the council does not want to use up more than one acre of land for the new dog park. Nina has looked on the Internet and found that the area of a regular pentagon can be calculated using this formula:

$$\frac{5s^2}{4\tan\frac{\pi}{5}}$$

where s is the length of a side. The length of a side can be calculated using:

$$2r\sin\frac{\pi}{5}$$

where r is the distance from the center of the pentagon to a vertex (corner). She also found that one acre of land is 43560 square feet. Nina has come to you for help with the calculations. Write a program that will calculate the area and fencing required for each of the proposed locations for the dog park.

Input: A number N representing the number of proposed locations for the park followed by N real numbers each representing the distance in feet from the center of the proposed park to any corner of the pentagon.

Output: For each proposed location print "LOCATION #" followed by the location number followed by one space. For each location that will fit within an acre, print the area in square feet and length of fencing in feet required for the location. Each value should be rounded to the nearest hundredth and separated by one space. For any locations that will not fit within an acre print "LOCATION #" followed by the location number followed by one space and then "WILL NOT FIT".

Sample input:

```
3
100
200
75.5
```

Sample output:

```
LOCATION #1 23776.41 587.79
LOCATION #2 WILL NOT FIT
LOCATION #3 13553.15 443.78
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